UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/619,376	07/11/2003	Julia A. Farroni	NU-202-CIP	5815

38731 7590 09/19/2005

NUFERN
7 AIRPORT PARK ROAD
EAST GRANBY, CT 06026

EXAMINER	
KANG, JULIANA K	
ART UNIT	**PAPER NUMBER**
2874	

DATE MAILED: 09/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/619,376	FARRONI ET AL.	
	Examiner	Art Unit	
	Juliana K. Kang	2874	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 June 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-32 and 46-67* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *67* is/are allowed.

6)☒ Claim(s) *1-13,16-19,23,24,26-32,46-49,54-57 and 62-64* is/are rejected.

7)☒ Claim(s) *14,15,20-22,25,50-53,57-61 and 65* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *2/28/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

1. Applicant's communication filed on 6/28/05 has been carefully studied by the Examiner. The arguments advanced therein are not persuasive and the rejections based upon prior art made of record in the previous office action are hereby maintained. Thus, this action is made **final**.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 2, 4, 5, 12, 13, 16-19, 24, 26, 28, 29, 46-49, 55, 56, 63 and 64 are rejected under 35 U.S.C. 102(e) as being anticipated by Mazzarese et al (U.S. Patent 6,483,973 B1).

Regarding claim 1, Mazzarese et al disclose an optical fiber comprising: a photosensitive core (20) comprising a concentration of a first material (Ge, see column 6 lines 28-44) that increases the refractive index of the core and a concentration of a second material (F, see column 6 line 28-44) that is other than boron and that reduces the refractive index of the core; a cladding (40) disposed about the core for tending to confine light to the core; and at least one longitudinally extending region (47, see Fig. 5c) having a thermal coefficient of expansion (TCE) that is different from the TCE of the

cladding (see column 5 lines 32-35) whereby the optical fiber is photosensitive and birefringent (no effect on polarization, see abstract).

Regarding claims 2 and 13, Mazzarese et al show two longitudinally extending region that are disposed in diametrically opposed portions of the cladding and spaced form the core (see Fig. 5c) and outer perimeter with different shapes including a generally circular shape (see column 5 line 54 to column 6 line 20).

Regarding claims 4 and 12, Mazzarese et al disclose silica (SiO2) based core doped with different material including Ge and F (see column 6 lines 28-33).

Regarding claim 5, when germanium is doped to silica, it is usually in the form of germanium dioxide (see Akasaka et al U.S. Patent 5,673,354, see column 5 lines 19-21).

Regarding claim 16, Mazzarese et al disclose the claimed second cladding comprising an index of refraction that is less than the index of refraction of the cladding (40) (see column 7 lines 41-51).

Regarding claims 17, 18 and 26, Mazzarese et al disclose having a rare earth including ytterbium (see column 6 lines 29-31 and 46).

Regarding claims 19, 24, 55, 56, 63 and 64, Mazzarese et al disclose the core with a numerical aperture of 0.07 (see column 6 line 38).

Regarding claims 28 and 29, as described above Mazzarese et al disclose the claimed invention. Furthermore, germanium is known to be photosensitive (as applicant stated in the disclosure), Mazzarese et al's core which is doped with germanium inherently provides means for receiving an index grating.

Regarding claims 46-48, since Mazzarese et al disclose the claimed invention, it would also inherently meet the limitation of having absorption per unit length that is within 15 percent of a test fiber.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 3, 6-11, 23, 24, 27, 30-32, 54 and 62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mazzarese et al (U.S. Patent 6,483,973 B1).

Regarding claim 3, as described above Mazzarese et al disclose the claimed invention except an index grating. Using a grating in an optical fiber art is well known in order to use the optical fiber in different applications and Mazzarese et al's core is photosensitive. Thus, applying an index grating in Mazzarese et al would also have been obvious to one having ordinary skill in the art to use the fiber in different optical applications that requires manipulations of optical data.

Regarding claims 6-11 and 30-32 as described above Mazzarese et al disclose the claimed invention except a concentration of germanium dioxide of at least about 10% by weight and a concentration of fluorine of at least about 0.1% by weight. It is known in the art that germanium increases the index of refraction and fluorine decreases the index of refraction. Since Mazzarese et al teach that the core can be

doped with materials that can increase and decrease the index of refraction of the core and the core usually has higher index of refraction than the cladding, using any desired amount of germanium and fluorine including the claimed concentration of germanium dioxide and fluorine would have been obvious to one having ordinary skill in the art at the time the invention was made to obtain the desired optical fiber characteristics for an appropriate optical application. Also it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Regarding claim 23, as described above Mazzarese et al teach the claimed limitations except Mazzarese et al do not teach the core diameter of greater than 25 microns. It is known in the art that dispersion decreases as a core diameter is increased. Thus it would have been obvious to use a bigger diameter as claimed in Mazzarese et al to reduce dispersion.

Regarding claim 27, as described above Mazzarese et al teach the claimed limitations including doping the longitudinally extending regions with boron trioxide (see column 7 lines 38-40).

Regarding claims 54 and 62, even though Mazzarese et al do not explicitly teach core numerical aperture that is greater than 0.25, Mazzarese et al sates that it *may* range from 0.07 to 0.25. Thus having any numerical which is very close to 0.25 would have been obvious to one having ordinary skill in the art.

Allowable Subject Matter

6. As indicated during the last Office action claims 14, 15, 20, 21, 22 and 25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claim 67 that includes the allowable subject matter indicated in the previous Office action is allowable. Also new claims 50-53, 57-61 and 65 which also include the same allowable subject matter as indicated in the previous Office action are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

7. Applicant's arguments filed 6/28/05 have been fully considered but they are not persuasive. Applicant argues that the Mazzarese reference teach no effect on polarization wherein the applicant's present invention has to do with birefringence wherein the polarization properties are effected (see page 2 and 3 of applicant's remarks), thus Mazzarese et al teach away from the present invention and fails to teach or suggest the claimed invention. The Examiner does not agree with this. As applicant states the Mazzarese reference do teach no effect on the polarization properties on the light traveling in the core member when the difference between the refractive index of the cladding member and the stress filed portion is *within a such range*. But this is just one embodiment of Mazzarese et al. Mazzarese et al state, "When sufficient amount of

the dopants are used, the coefficient of thermal expansion of the doped region 47 can be made substantially different from that of the surrounding cladding member 40. The difference in coefficient of thermal expansion between the doped and undoped regions 47 and 40 in the cladding member 40 can create a significant stress filed portion 48 in the cladding member 40." And the significant stress filed portion would inherently causes birefringence in the fiber.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Information Disclosure Statement

9. The prior art documents submitted by applicant on 2/28/05 have been considered and made of record (note the attached copy of form PTO-1449).

The list of three non patent literature documents submitted during the previous office action that were review but not made of record will be made of record as Patent numbers 6,770,364, and 6,687,445 and Patent Application Number 2004/0069019 in a PTO-892.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Juliana K. Kang whose telephone number is (571) 272-2348. The examiner can normally be reached on Mon. & Thur. 10:00-3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rod Bovernick can be reached on (571) 272-2344. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JULIANA KANG
PRIMARY EXAMINER

9/16/05